

**COPY**

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July 16, 2008

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Appeal No. 2007-4453

Confirmation No. 8452

Re: U.S. Patent Application No. 09/404,520  
Filed: September 23, 1999  
Title: *Emericella Nidulans* Genome Sequence on Computer  
Readable Medium and Uses Thereof  
Appellants: Yongwei CAO *et al.*  
Attorney Docket No.: 16517.081

Sir:

Transmitted herewith for appropriate action by the U.S. Patent and Trademark Office, is an original Petition for Review to the United States Court of Appeals for the Federal Circuit. Another original and three copies of this Petition, as well as Arnold & Porter LLP check no. 10137970 in the amount of \$450.00, are being hand-carried, on even date, to the Court of Appeals for the Federal Circuit.

Appellants do not believe that any additional fees are due in conjunction with this filing. However, if any fees are required in the present application, including any fees for extensions of time, then the Commissioner is hereby authorized to charge any such fees to Arnold & Porter LLP Deposit Account No. 50-2387, referencing docket number 16517.081. A duplicate copy of this letter is enclosed.

Respectfully submitted,

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Enclosure



**UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT**

Yongwei CAO *et al.*,

Petitioner

v.

**PETITION FOR REVIEW**

United States Patent and Trademark Office, Respondent.

Yongwei Cao, Azita Ghodssi, Gregory J. Hinkle, James D. McIninch, William E. Timberlake, and Jaehyuk Yu hereby appeal to the Court of Appeals for the Federal Circuit for review of the decision of the Board of Patent Appeals and Interferences ("B.P.A.I."), U.S. Patent and Trademark Office, entered on May 19, 2008 in application serial number 09/404,520 filed September 23, 1999 (also accorded B.P.A.I. appeal number 2007-4453).

Dated: July 16, 2008

A handwritten signature in black ink that reads "David R. Marsh".

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* YONGWEI CAO, AZITA GHODSSI, GREGORY J. HINKLE,  
JAMES D. McININCH, WILLIAM E. TIMBERLAKE,  
and JAEHYUK YU

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Appeal 2007-4453  
Application 09/404,520  
Technology Center 1600

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Decided: May 19, 2008

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Before TONI R. SCHEINER, DONALD E. ADAMS, and ERIC GRIMES,  
*Administrative Patent Judges.*

Opinion for the Board filed by *Administrative Patent Judge* GRIMES.

Opinion Concurring filed by *Administrative Patent Judge* ADAMS.

GRIMES, *Administrative Patent Judge.*

DECISION ON REQUEST FOR REHEARING

Appellants have requested rehearing of the decision entered January 31, 2008 (hereafter "Decision"). The Decision affirmed the rejection of claims 58-79 for lack of patentable utility. The request for rehearing is denied.

## DISCUSSION

Appellants argue that Rodriguez-Tomé does not teach all the elements of the claims because it does not teach the recited SEQ ID NOs (Req. Reh'g 12-13). This argument is repeated almost verbatim from the Appeal Brief (pp. 10-11 and p. 12, first paragraph) and was addressed in the Decision (p. 4). It does not represent a point that we misapprehended or overlooked. 37 C.F.R. § 41.52.

Appellants also argue that the SEQ ID NOs recited in the claims are functional descriptive material because they are analogous to target nucleic acids in a “wet chemistry” array (Req. Reh'g 6-7); that the facts of the instant case are distinguishable from those of *In re Ngai*, 367 F.3d 1336 (Fed. Cir. 2004), and are more similar to *In re Gulack*, 703 F.2d 1381 (Fed. Cir. 1983) (*id.* at 9-11); and that “the claims must be read as a whole” and the SEQ ID NOs “should be given patentable weight” (*id.* at 11-12).

Again, these arguments do not “state with particularity the points believed to have been misapprehended or overlooked by the Board,” as required by 37 C.F.R. § 41.52. These arguments were specifically addressed in the initial decision in Appeal 2005-2746. See the 2005-2746 Decision at 10-12 (addressing the analogy to a “wet chemistry” array), at 5-6 and 8-9 (discussing *Gulack* and *Ngai*), and at 5-10 (discussing our reasons for concluding that the SEQ ID NOs are nonfunctional descriptive matter and therefore not entitled to patentable weight).

In the Decision, we did not repeat contents of the 2005-2746 Decision but we indicated that “[w]e stand by that reasoning and see no need to expand on it” (Decision 4). Appellants chose not to address some aspects of

the 2005-2746 Decision in their Appeal Brief, and the arguments that Appellants chose not to make have been waived. New arguments are not permitted in a Request for Rehearing. *See* 37 C.F.R. § 41.52(a)(1) (“Arguments not raised in the briefs before the Board . . . are not permitted in the request for rehearing except as permitted by paragraphs (a)(2) and (a)(3)”). *See also Cooper v. Goldfarb*, 154 F.3d 1321, 1331 (Fed. Cir. 1998) (“A party cannot wait until after the Board has rendered an adverse decision and then present new arguments in a request for reconsideration.”).

Finally, Appellants argue that the recent precedential decision in *Ex parte Nehls*, 2008 WL 258370 (BPAI 2008), is distinguishable on its facts (Req. Reh’g 8). Appellants argue that the SEQ ID NOs recited in the instant claims are not simply stored for later retrieval but have a functional effect on the claimed process:

For example, if a target sequence is designated as A and a stored sequence is designated as B, comparing is completed, where A is homologous with B, identifying is then done pursuant to the claimed methods. However, where A is not homologous with B, no identifying is done, and the next comparison may take place immediately. As such, the identity of B matters, and in fact changes the efficiency of the process, even if to an infinitesimal degree, for example conducted at the speed of a computer, so that identifying is either completed or deemed inappropriate. As such, the identity of the individual stored sequences must be deemed functional descriptive matter.

(*Id.* at 8-9.)

New arguments based on recent Board or court decisions may be acceptable in a Request for Rehearing, 37 C.F.R. § 41.52(a)(2), but this argument is unpersuasive. As we understand it, Appellants’ position is that the SEQ ID NOs are functional descriptive matter because they affect the

efficiency of comparing a target sequence to the database: if the database contains, e.g., SEQ ID NO: 16207 and a target sequence matches that sequence, the comparison can stop at that point without comparing the target sequence to the remaining sequences in the database.

Appellants' argument is unpersuasive for two reasons. First, we did not rely on *Ex parte Nehls* as a basis for affirming the rejections in this appeal. Therefore, even assuming that the facts of this case can be distinguished from those of *Nehls*, that would not show any error in the reasoning underlying our affirmance in this case.

Second, the claims do not reflect Appellants' basis for asserting that the SEQ ID NOs are functional descriptive matter. Claim 58 reads as follows:

58. A method of identifying a nucleotide sequence comprising comparing a target sequence to a sequence stored in computer readable medium having recorded thereon at least 100 nucleotide sequences including sequence selected from the group consisting of SEQ ID NO: 16207 through SEQ ID NO: 27905 and complements thereof, and identifying said target sequence as being present in the computer readable medium based on said comparison, wherein said target sequence is compared to at least one sequence selected from the group consisting of SEQ ID NO: 16207 through SEQ ID NO: 27905.

The other independent claims are similar, in that none of them states that the comparison is carried out only until an exact match, or a match with a specified degree of similarity, is found, and then the comparison is terminated. Therefore, the limitations of the claims do not support Appellants' argument that the SEQ ID NOs recited in the claims are functional because they might increase the efficiency of a sequence

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comparison by limiting the number of database sequences to which a target sequence must be compared.

In summary, Appellants have not shown that we misapprehended or overlooked any points in the Decision. The request for rehearing is denied.

REHEARING DENIED

ADAMS, *Administrative Patent Judge*, concurring-in-result.

I remain of the view that the evidence and reasoning on this record does not support the Examiner's rejection, for the reasons stated in my dissenting opinions. Even though I sympathize with Appellants' position on the merits, however, I agree with the majority that – as a matter of procedure – the request for rehearing must be denied.

I write separately to cut through what may become a distraction on this record. Specifically, Appellants' sequence A – sequence B example reproduced by the majority above (*supra* 3). On that point I agree with the majority that the claims before us on appeal do not require "that the comparison is carried out only until an exact match, or a match with a specified degree of similarity, is found, and then the comparison is terminated" (*supra* 4).

Nevertheless, whether the claimed method requires the process to continue after a target sequence is identified among the stored sequences or not, for the reasons provided in my dissenting opinions, I believe the issue on this record is whether a the functional relationship between a nucleic acid molecule and the substrate of an array is lost if we perform an equivalent "wet chemistry" method on a computer. On this issue I respectfully disagree with the majority's opinion.

In summary, even though I remain of the opinion that the evidence and reasoning on this record does not support the Examiner's rejection, I agree with the majority that the Request for Rehearing must be denied.

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte*

YONG WEI CAO, AZITA GHODSSI, GREGORY J. HINKLE,  
JAMES E. MCININCH, WILLIAM E. TIMBERLAKE, and JAEHYUK YU

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Appeal 2007-4453  
Application 09/404,520  
Technology Center 1600

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Decided: January 31, 2008

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Before TONI R. SCHEINER, DONALD E. ADAMS, and ERIC GRIMES,  
*Administrative Patent Judges.*

Opinion for the Board filed by *Administrative Patent Judge* GRIMES.

Opinion Dissenting filed by *Administrative Patent Judge* ADAMS.

GRIMES, *Administrative Patent Judge*.

## DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 involving claims to a method of comparing a target sequence to certain other sequences. The Examiner has rejected the claims as obvious. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

## BACKGROUND

This application was the subject of a previous appeal to this board (Appeal 2005-2746, decided March 16, 2006). In that appeal, we affirmed the Examiner's rejection based on obviousness. Appellants requested continued examination and amended the claims. The Examiner rejected the amended claims for obviousness and this appeal followed.

## DISCUSSION

### 1. CLAIMS

Claims 58-79 are pending and on appeal. The claims have not been argued separately and therefore stand or fall together. 37 C.F.R. § 41.37(c)(1)(vii). We will focus on claim 58, which is representative and reads as follows (with the language added by amendment emphasized):

58. A method of identifying a nucleotide sequence comprising comparing a target sequence to a sequence stored in computer readable medium having recorded thereon at least 100 nucleotide sequences including sequence selected from the group consisting of SEQ ID NO: 16207 through SEQ ID NO: 27905 and complements thereof, and identifying said target sequence as being present in the computer readable medium *based on said comparison, wherein said target sequence is compared to at least one sequence selected from the group consisting of SEQ ID NO: 16207 through SEQ ID NO: 27905.*

## 2. OBVIOUSNESS

Claims 58-79 stand rejected under 35 U.S.C. § 103 as obvious in view of Rodriguez-Tomé.<sup>1</sup> We previously held that Rodriguez-Tomé would have made obvious the method defined by claim 58 as it stood in Appeal 2005-2746. The issue, then, is whether the language added to the claim by Appellants' amendment distinguishes the claimed method from the prior art.

We conclude that it does not. The language added by amendment states that the target sequence is identified as being present in the computer readable medium "based on said comparison"; i.e., based on the comparison of the "target sequence to a sequence stored in computer readable medium." The amendment also added a "wherein" clause that states that the target sequence is compared to at least one of the sequences in SEQ ID NO: 16207 to SEQ ID NO: 27905. That is, the amendment makes clear that the claimed method requires comparing the target sequence to at least one of the sequences represented by SEQ ID NOs 16207 to 27905.

We previously concluded, however, that the specific sequences recited in the claims do not distinguish the claimed method from the prior art method. We stated that "the SEQ ID NOs appear to be used merely as inputs for a computer program that calculates the degree of similarity between a target sequence and each of the sequences in a database" (Decision in Appeal 2005-2746, page 8). We therefore interpreted the claims, before they were amended, to require comparison of the target sequence to at least one of SEQ ID NOs 16207 to 27905. We concluded that when a claimed

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<sup>1</sup> Rodriguez-Tomé et al., "The European Bioinformatics Institute (EBI) databases," *Nucleic Acids Research*, Vol. 24, pp. 6-12 (1996).

method merely manipulates data, the obviousness or nonobviousness of the method does not depend on whether the particular set of data was novel: given a known method of comparing data representing, e.g., nucleic acid structures, it would be obvious to use that method to compare any two sets of data representing nucleic acid structures, even if a particular sequence of As, Gs, Cs, and Ts had not previously been compared to other sequences of As, Gs, Cs, and Ts.

(*Id.* at 11-12.) This conclusion applies equally to the claims as they currently stand.

Appellants argue that the claimed methods are not obvious because the recited sequences are functional descriptive matter (Br. 8-10). This argument was made in the previous appeal (see the Reply Brief filed January 19, 2005, pages 2-4) and is adequately addressed in our previous opinion (see 2005-2746 Decision, pages 5-10).

Appellants also argue that Rodriguez-Tomé does not teach or suggest all of the limitations of the claims because it does not disclose any of the sequences of SEQ ID NO: 16207 through 27905 (Br. 10-12). This distinction is acknowledged in our previous decision (2005-2746 Decision, page 3) and we explained at length our reasons for concluding that the reference nevertheless supports a conclusion of obviousness under 35 U.S.C. § 103 (*id.* at 5-13). We stand by that reasoning and see no need to expand on it.

#### SUMMARY

Neither the amendments to the claims nor Appellants' arguments in this appeal merit any change in the outcome of the previous appeal of this application. The rejection under 35 U.S.C. § 103 is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

ADAMS, *Administrative Patent Judge*, dissenting.

The majority relies on their underlying decision in Appeal No. 2005-2746 (2746 Decision). Therefore, I direct attention to my dissent in the 2746 Decision. There can be no doubt that the majority is struggling to identify some nexus between their conclusion that the SEQ ID NOS recited in Appellants' claimed invention represent "printed matter" and the legal precedent they rely upon. Finding none, the majority creatively blends the concept of patent eligible subject matter under 35 U.S.C. § 101 with the "printed matter" doctrine of 35 U.S.C. § 103 to arrive at their conclusion that the claimed invention is obvious over a prior art reference that does not teach the SEQ ID NOS recited in Appellants' claims.

In my opinion, the precedent relied upon by the majority fails to support their conclusion. Accordingly, I dissent.

*Context:*

I find it necessary to take a step back and provide some context for the various arguments presented on this record. No one would dispute that "wet chemistry"<sup>2</sup> methods of comparing a target nucleic acid molecule to an array comprising nucleic acid molecules on a substrate, e.g., a microtiter plate, are routine in the field of biotechnology.<sup>3</sup> Those of ordinary skill in this art routinely use these "wet chemistry" methods to determine whether a

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<sup>2</sup> Methods performed on a laboratory bench.

<sup>3</sup> See, e.g., Spec. 12: 16-19 (wherein Appellants cite "Sambrook *et al.*, *Molecular Cloning, A laboratory Manual*, 2<sup>nd</sup> Ed., Cold Spring Harbor Press, Cold Spring Harbor, New York (1989), and by Haymes *et al.*, *Nucleic Acid Hybridization, A Practical Approach*, IRL Press, Washington, DC (1985).").

particular target nucleic acid molecule shares some degree of homology<sup>4</sup> with a nucleic acid molecule present on an array, and if so, to identify which nucleic acid molecule(s) present on the array the target nucleic acid molecule shares homology with.

Those of ordinary skill in this art recognize that there are a number of practical applications for an array of nucleic acid molecules, including, *inter alia*, the identification of homologous nucleic acid molecules in different species.<sup>5</sup> Therefore, no one would dispute that the addition of a novel and unobvious nucleic acid molecule to an array would result in a novel and unobvious array.<sup>6</sup> In such a scenario, the novel and nonobvious nucleic acid molecule and the substrate, the microtiter plate, are functionally related in the context of the array. Further, it should go without saying that the performance of a method with arrays having different sets of nucleic acid

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<sup>4</sup> See, e.g., Spec. 12: 4-7 (“As used herein, two nucleic acid molecules are said to be capable of specifically hybridizing to one another if the two molecules are capable of forming an anti-parallel, double-stranded nucleic acid structure along a sufficient portion of the molecule to allow for stable binding under laboratory hybridizing conditions.”).

<sup>5</sup> See, e.g., Spec. 28: 5-9 (“Nucleic acid molecules and fragments thereof of the present invention may also be employed to obtain nucleic acid molecule homologs of non-*E. nidulans* species including the nucleic acid molecules that encode, in whole or in part, protein homologs of other species or other organisms, sequences of genetic elements such as promoters and transcriptional regulatory elements.”).

<sup>6</sup> This is not to say that simply because a novel and nonobvious nucleic acid molecule is presented on an array it is *per se* patentable. To the contrary, the effect of 35 U.S.C. § 101 and § 112 must be considered as well. For example, the use of an array of nucleic acid molecules that have no utility to identify homologs of these nucleic acid molecules would be expected to identify homologs that also have no utility. See *In re Fisher*, 421 F.3d 1365, 1374 (Fed. Cir. 2005).

molecules on the substrate would necessarily result in a different set of results for each array.

On this record, claim 58 is drawn to a method of identifying a nucleotide sequence comprising comparing a target sequence to an array of nucleic acid sequences. The difference between the claimed method and an equivalent “wet chemistry” method is that the claimed method requires the comparative steps be performed by a computer (*in silico*). Rather than having an array of nucleic acid molecules on a microtiter plate substrate as in a “wet chemistry” application, the method of claim 58 requires an array of SEQ ID NOs on a substrate that is a computer readable medium. As the majority appreciates “both approaches [(*in silico* and “wet chemistry”)] are ways of determining the degree of similarity between nucleic acids” (2746 Decision 11).

Therefore, the issue we are presented with on this record, is whether the functional relationship between a nucleic acid molecule and the substrate of an array is *lost* if we perform an equivalent “wet chemistry” method on a computer (*in silico*). The majority asserts that the functional relationship is lost - I disagree.

*Claim Interpretation:*

The majority limits their review of this record to claim 58.

Accordingly, I do the same. Claim 58 is drawn to a method of identifying a nucleotide sequence. The claimed method comprises two steps:

1. comparing a target sequence to a sequence stored in computer readable medium; and
2. identifying whether the target sequence is present in the computer readable medium.

Claim 58 requires that the computer readable medium has stored thereon at least 100 nucleotide sequences including a sequence selected from the group consisting of SEQ ID NO: 16207 through SEQ ID NO: 27905 and complements thereof. Thus, the “computer readable medium” is the electronic equivalent of a “wet chemistry” array.

Claim 58 requires that the target sequence is compared to at least one sequence selected from the group consisting of SEQ ID NO: 16207 through SEQ ID NO: 27905. Thus, the “comparing step” is the electronic equivalent of the steps performed in “wet chemistry” methodology to compare nucleic acid molecules.

The identifying step of claim 58 is the electronic equivalent of “wet chemistry” methods of detecting the identity of a nucleic acid molecule on an array that shares some degree of homology with the target sequence.

*Patent Eligible Subject Matter:*

The issue of patent eligible subject matter under 35 U.S.C. § 101 is not before this panel. Nevertheless, in discussing the obviousness rejection under 35 U.S.C. § 103, the majority enters into a discussion of patent eligible subject matter (2746 Decision 12-13). Therefore, I find it necessary to address this issue of patent eligible subject matter.

“Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.” 35 U.S.C. § 101. There are, however, a number of judicial exceptions to these categories of statutory invention. Therefore,

[d]etermining whether the claim falls within one of the four enumerated categories of patentable subject matter recited in 35 U.S.C. § 101 (process, machine, manufacture or composition of matter) does not end the analysis because claims directed to *nothing more than* abstract ideas (such as mathematical algorithms), natural phenomena, and laws of nature are not eligible and therefore are excluded from patent protection.

Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility (“Guidelines”), 1300 Off. Gaz. Pat. Office 142, 145 (November 22, 2005) (emphasis added). In addition, descriptive material (e.g., “printed matter”) standing alone and in the absence of a functional relationship with the underlying substrate “does not constitute a statutory process, machine, manufacture or composition of matter and should be rejected under 35 U.S.C. § 101.” *Id.* at 152.

The law is clear, however, that there is a distinction between statutory ineligible laws of nature, natural phenomena, abstract ideas, and descriptive

material *per se* and the practical application of each. *See State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1373 (Fed. Cir. 1998) (“[W]e hold that the transformation of data . . . by a machine through a series of mathematical calculations into a final share price, constitutes a *practical application* of a mathematical algorithm, formula, or calculation.” (emphases added)); *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994) (“This is not a disembodied mathematical concept which may be characterized as an ‘abstract idea,’ but rather a specific machine to produce a useful, concrete, and tangible result.”); *In re Cominsky*, 499 F.3d 1365, 1379 (Fed. Cir. 2007) (“When an unpatentable mental process is combined with a machine, the combination may produce patentable subject matter, as the Supreme Court’s decision in *Diehr* and our own decisions in *State Street Bank* and *AT&T* have confirmed.”); Guidelines at 152 (“Certain types of descriptive material, such as music, literature, art, photographs and mere arrangements or compilations of facts or data, *without any functional interrelationship* is not a process, machine, manufacture or composition of matter.” (emphasis added)).

Simply stated, “[i]f the claim is directed to a practical application of the § 101 judicial exception producing a result tied to the physical world that does not preempt the judicial exception, then the claim meets the statutory requirement of 35 U.S.C. § 101.” Guidelines at 146.

On this record, Appellants’ claimed invention is not a disembodied listing of SEQ ID NO: 16207 through SEQ ID NO: 27905 which may be characterized as an ‘abstract idea’ or ‘non-functional descriptive matter,’ but rather it is a specific method that would not accomplish it’s stated purpose of

comparing a target sequence to SEQ ID NO: 16207 through SEQ ID NO: 27905 in the absence of these specific SEQ ID NOs, or for that matter a different set of SEQ ID NOs. Stated differently, Appellants' claimed invention includes "a practical application of the § 101 judicial exception producing a result tied to the physical world that does not preempt the judicial exception, . . . [therefore] the claim meets the statutory requirement of 35 U.S.C. § 101." *Cf.* Guidelines at 146.

For the foregoing reasons the majority's focus on patent ineligible subject matter is not relevant to the issue before us on appeal. For the same reasons it is no surprise that there is no dispute on this record that Appellants' claimed invention is directed to statutory subject matter.

*Obviousness:*

The Examiner finds that Rodriguez-Tome does not teach a method wherein at least one sequence selected from the group consisting of SEQ ID NO: 16207 through 27905 is compared with a target sequence (Ans. 5). Simply stated, the SEQ ID NOs recited in Appellants' claims are novel and unobvious in view of the prior art of record. Nevertheless, the Examiner finds that the SEQ ID NOs constitute "non-functional descriptive material because the content of the nucleic acid sequence database does not alter how the computer readable media functions, i.e., the sequence data does not reconfigure the computer readable media to perform a different function than the computer readable media of Rodriguez-Tome" (Ans. 7).<sup>7</sup>

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<sup>7</sup> I recognize the Examiner's reliance on *Diehr* to support his conclusion that the SEQ ID NOs are non-functional descriptive matter. However, as discussed above, *Diehr* relates to whether a claim is drawn to patent eligible subject matter under 35 U.S.C. § 101 which is not the issue before this panel

Based on this reasoning the Examiner gives no patentable weight to the SEQ ID NOs recited in the claimed method. This opens the door for the Examiner to conclude that Appellants' claimed method is obvious in view of Rodriguez-Tome even though the reference fails to teach the SEQ ID NOs required by Appellants' claimed method and therefore cannot possibly teach a method wherein a target sequence is compared to at least one sequence selected from the group consisting of SEQ ID NO: 16207 through 27905 as required by Appellants' claimed method.

For their part the majority finds that under 35 U.S.C. § 103 the SEQ ID NOs have no functional relationship with the computer readable media or method and are thus analogous to the instructions (e.g., the intended use limitation) in *In re Ngai*, 367 F.3d 1336, 1339 (Fed. Cir. 2004) (2746 Decision 8). This is incorrect.

“Ngai invented a new method for amplifying and normalizing RNA.” *Ngai*, 367 F.3d. 1337. The Examiner found that claims directed to this method were allowable. *Ngai*, 367 F.3d at 1338. The issue in *Ngai* was whether a kit comprising a buffer and instructions for the use of the buffer were unpatentable under 35 U.S.C. § 102. *Id.* As our appellate reviewing court pointed out in *Ngai* “[t]he PTO argues that Ngai’s claim merely teaches a new use for an existing product.” *Id.* Stated differently, the instructions in the kit were merely a recitation of the use of the buffer. In this regard, I note that there is a long line of precedent that explains that the recitation of a new use of a product or composition does not change the components of the product or composition. *See e.g., In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990) (“[t]he discovery of a new property or use of a for review.

previously known composition, even when that property and use are unobvious from the prior art, cannot impart patentability to claims to the known composition”); *In re Pearson*, 494 F.2d 1399, 1403 (CCPA 1974) (“terms [that] merely set forth the intended use for . . . an otherwise old composition . . . do not differentiate the claimed composition from those known in the prior art.”); *In re Zierden*, 411 F.2d 1325, 1329 (CCPA 1969) (“A mere statement of a new use for an otherwise old or obvious composition cannot render a claim to the composition patentable.”); *In re Lemin*, 326 F.2d 437, 440 (1964) (“It seems to us that the composition . . . would be exactly the same whether the user were told to cure pneumonia in animals with it . . . or to promote plant growth with it (as here). The directions on the label will not change the composition.”).

*Ngai* did not change this fundamental principle of patent law. As the court in *Ngai* explains “[h]ere, the printed matter in no way depends on the kit, and the kit does not depend on the printed matter. All that the printed matter does is teach a new use for an existing product.” *Ngai*, 367 F.3d at 1339. The majority does not explain how the facts in *Ngai* relate to the facts and method claimed on this record. Instead, they just simply assert that it does (see 2746 Decision 8). I am not persuaded by the majority’s failure to articulate a nexus for such a comparison.

Perhaps the difficulty the majority is experiencing in their inability to articulate a nexus between the facts on this record and the printed matter cases is because “[t]he printed matter cases have no factual relevance where ‘the invention as defined by the claims *requires* that the information be processed not by the mind but by a machine, the computer.’” *In re Lowry*,

32 F.3d 1579, 1583 (Fed. Cir. 1994) (*quoting In re Bernhart*, 417 F.2d 1395, 1399 (CCPA 1969)).

I recognize the majority's assertion that this portion of the *Lowry* opinion is *dicta* (2746 Decision 6 n. 2). According to the majority, "the data structures in Lowry were not analogous to printed matter . . . [and that] [t]he Lowry court did not consider whether, and under what circumstances, computer-readable information that is analogous to printed matter can distinguish a claimed invention from the prior art" (*id.*). Curiously, however, the majority relies on *Lowry* to support their conclusion that the SEQ ID NOs recited in Appellants' claimed method are non-functional descriptive matter (2746 Decision 7 ("the descriptive material (SEQ ID NOs) recited in claim 58 is not functional material like the data structures in Lowry.")). Contrasting the Appellants' claimed invention with *Lowry*, the majority finds "no evidence . . . [that Appellants'] SEQ ID NOs interact with other computer hardware or software to affect the efficiency or accuracy or any other characteristic of the comparison" (2746 Decision 7-8).

Here, as in *Lowry*, the majority "erroneously extended a printed matter rejection under section[ ] . . . 103 to a new field in this case, which involves information stored in a memory." *Lowry*, 32 F.3d at 1583. When the claimed invention is considered as a whole the SEQ ID NOs are not merely data stored in a database with no relationship to the underlying substrate, or its function in the claimed method. *Cf. Id.* ("Nor are the data structures analogous to printed matter. *Lowry*'s ADOs do not represent merely underlying data in a database. ADOs contain both information used by the application programs and information regarding their physical

interrelationships with a memory.”). The SEQ ID NOs contain information used by the claimed method to perform the claim recited function of comparing a target sequence to at least one of the recited SEQ ID NOs. Stated differently, just as with their “wet chemistry” counterpart, the array of SEQ ID NOs required by Appellants’ claimed method are functionally related to the substrate and are required for the method to achieve its stated purpose.

The majority and the Examiner appear to be under the impression that in order for Appellants’ SEQ ID NOs to represent functional material the SEQ ID NOs must perform the same function as Lowry’s data structure. *Lowry* does not stand for the proposition that in order for a “data structure” to be considered “functional” descriptive material it must somehow provide increased efficiency in computer operation. This idea of “increased efficiency” was one of the tangible benefits of Lowry’s invention.

According to Lowry, the data structures provide tangible benefits: data stored in accordance with the claimed data structures are more easily accessed, stored, and erased. Lowry further notes that, unlike prior art data structures, Lowry’s data structures simultaneously represent complex data accurately and enable powerful nested operations. In short, Lowry’s data structures are physical entities that provide increased efficiency in computer operation.

*Lowry*, 32 F.3d at 1584. The tangible benefit of Appellants’ claimed invention is to identify a nucleotide sequence by comparing a target sequence to at least one sequence selected from the group consisting of SEQ ID NO: 16207 to 27905. Contrary to the majority’s intimation, Appellants’ SEQ ID NOs are *not* non-functional descriptive matter simply because they

serve a different purpose than Lowry's data structures. On this record, the claimed method would be wholly incapable of comparing a target sequence to at least one of the sequences selected from the group consisting of SEQ ID NOS. 16207 to 27905 stored in computer readable medium if SEQ ID NOS 16207 to 27905 were not present. Therefore, here as in *Lowry*, the data structures, the SEQ ID NOS, "perform a function. *Gulack* requires no more." *Lowry*, 32 F.3d at 1584 (citation omitted).

On this record, neither the majority nor the Examiner have established a factual basis to support their conclusion that the SEQ ID NOS, when read in the context of the entire claim, lack a new and nonobvious functional relationship with the substrate in the context of Appellants' claimed method. *Cf. Lowry*, 32 F.3d at 1584.

"Under section 103, the board cannot dissect a claim, excise the printed matter from it, and declare the remaining portion of the mutilated claim to be unpatentable." *Gulack*, 703 F.2d at 1385. As the *Gulack* court explained, "[t]he claim must be read as a whole. If the board meant to disregard that basic principle of claim interpretation, we must reverse the rejection as a matter of law." *Gulack*, 703 F.2d at 1385. This is, however, precisely what the majority has done in this case. For the reasons stated above, when the claims are read as a whole, the SEQ ID NOS recited in Appellants' claims are functionally related to the computer readable medium to form an array which is functionally related to the method as claimed. Thus, the majority's reliance on *Gulack* does not support their position. (see 2746 Decision 5-6).

I recognize the majority's discussion of the "data structure" in *In re Warmerdam*, 33 F.3d 1354, 1362 (Fed. Cir. 1994) ((2746 Decision 6-7)). According to the majority, "[t]he Warmerdam court . . . concluded that the 'data structure' claimed therein was not a physical arrangement of hardware but instead was 'nothing more than another way of describing the manipulation of ideas contained in' other claims and therefore not statutory subject matter eligible for patenting" (*id.*). The majority's reliance on *Warmerdam* is off point. The portion of *Warmerdam* relied upon by the majority is addressing the issue of whether Warmerdam's claimed "data structure" was statutory subject matter within the meaning of 35 U.S.C. § 101, not whether the "data structure" was obvious under 35 U.S.C. § 103, the issue before this panel. Stated differently, the holding in *Warmerdam* "is a straightforward application of the basic principle that mere laws of nature, natural phenomena, and abstract ideas are not within the categories of inventions or discoveries that may be patented under § 101." *AT&T Corp. v. Excel Communications*, 172 F.3d 1352, 1360 (Fed. Cir. 1999). As discussed above, there is no dispute on this record that Appellants' claimed invention is statutory subject matter.

At best, the majority's reliance on *Warmerdam* serves only to emphasize how they have dissected Appellants' claimed invention to reach their conclusion that the SEQ ID NOs recited in Appellants' claimed invention are nonfunctional descriptive matter (2746 Decision 13). As discussed above, this analysis is contrary to the law the majority relies upon for support. *See Gulack*, 703 F.2d at 1385.

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Finally, I recognize the majority's discussion of the Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility ("Guidelines") (2746 Decision 9-10). The guidelines "are based on the USPTO's current understanding of the law and are believed to be fully consistent with the binding precedent of the Supreme Court, the Federal Circuit and the Federal Circuit's predecessor courts" (Guidelines at 142). Accordingly, for the reasons set forth above, the Guidelines fail to support the majority's position.

On reflection, I find that the SEQ ID NOs recited in Appellants' claims are not taught by the prior art of record. Accordingly, the array required to perform Appellants' claimed method is not taught by the prior art of record. In addition, I find that the SEQ ID NOs recited in Appellants' claimed methods are functionally related to the substrate as required by Appellants' claimed invention. Further, I find that the facts and legal precedent relied upon by the majority fails to support their position. Therefore, I dissent from the majority's decision to affirm the rejection of claims 58-79 under 35 U.S.C. § 103 (2746 Decision 13).

Ssc:

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